

MERISTIC CHARACTERS**BONY PARTS (min-mode-max)****Vertebrae**Total: 33¹ - X - 36²

Precaudal: 10 - X - 13

Caudal: 22² - X - 26**Gill Rakers & Branchiostegal Rays**

Upper gill rakers: X - X - X

Lower gill rakers: X - X - X

Branchiostegal rays: 7 - 7 - 7

FIN COUNTS (min-mode-max)

Fin (Position)	Spine(s)	Ray(s)
Pelvic (Thoracic)	1 - 1 - 1	3 - 3 - 3
Dorsal	8 - 10 - 11	13 - 15 - 17 ²
Pectoral	N/A	22 - 25 - 26
Anal	0 - 0 - 0	12 - 14 - 16

Caudal Fin Counts

Caudal upper secondary: X - X - X

Caudal upper principal: 6 - 6 - 6

Caudal lower principal: 6 - 6 - 6

Caudal lower secondary: X - X - X

LIFE HISTORY FEATURES**GENERAL**

Range:	Bering Sea, 54 to 66 °N - Washington, 46 to 48° 50' N
Ecology:	Epi-, meso-, and bathybenthal, 18-825 m
ELH Pattern:	Parity unknown, eggs probably demersal, pelagic larvae
Longevity:	

SPAWNING

Area:	
Season:	
Mode:	
Fecundity:	
Age at first maturity:	
Migration:	

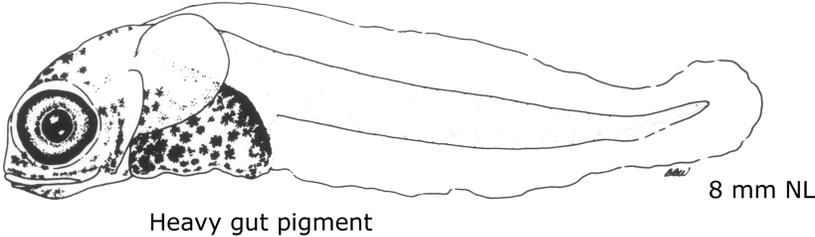
EARLY LIFE HISTORY DESCRIPTION**EGGS****Diameter (mm):****No. of oil globules:****Oil globule diameter:****Yolk:** Homogeneous**Chorion:****Egg/Embryo pigment:****Pigment diagnostics:****Diagnostic characters:****LARVAE****Hatch size(mm SL):** 7.4**Preanal length(%SL):** <50**Flexion length (mm SL):****Length at transformation
(mm SL):****Fin ray development
sequence:** Fins complete at 12 mm SL**Larval Pigment Patterns**

In each developmental larval stage, pigment is present in the regions listed below. For pigment regions see Figure 6.

Yolk-sac:**Preflexion:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, caudal finfold, pectoral fin**Flexion:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, pectoral fin**Postflexion:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal**Juvenile:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, dorsal finfold, caudal finfold, pectoral fin, dorsal, ventral, mediolateral, caudal**Pigment Diagnostics:** Double row of small pigment spots along ventral midline of gut (more pronounced in specimens >8 mm SL)**Diagnostic characters**

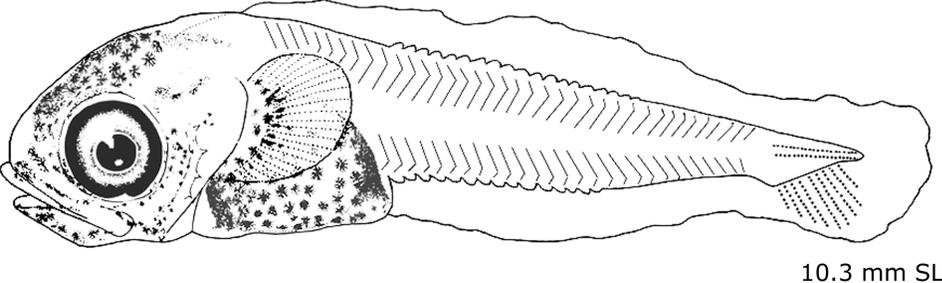
Similar to other Psychrolutids but with 4 preopercular spines

A

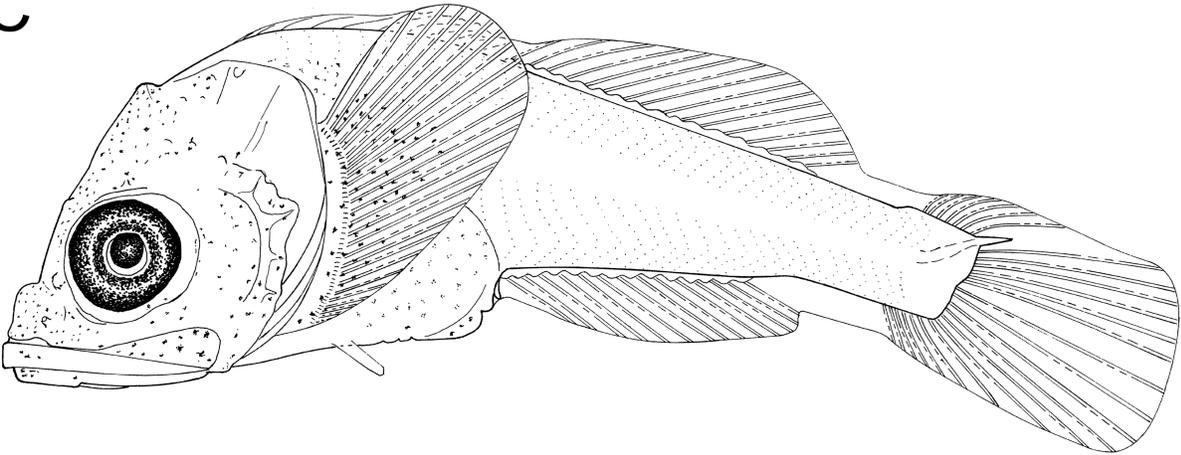


B

Four preopercular spines



C



GENERAL REFERENCES**Ref 1: Blackburn, J.E. 1973.**

A survey of the abundance, distribution, and factors affecting distribution of ichthyoplankton in Skagit Bay. M.S. thesis, Univ. Wash., Seattle, WA 98195, 136 p.

Ref 2: Amaoka, K., K. Nakaya, H. Araya, and T. Yasui (eds). 1983.

Fishes from the north-eastern Sea of Japan and the Okhotsk Sea off Hokkaido: The intensive research of unexploited fishery resources on continental slopes. Japan Fisheries Resource Conservation Association, 372 p.

Ref 3: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

FOOTNOTES¹ **Mecklenburg, C.W., T.A. Mecklenburg, and L.K. Thorsteinson. 2002.**

Fishes of Alaska. Am. Fish. Soc., Bethesda, MD, 1037 p.

² **Washington, B.B.**

Unpubl. NMFS Systematics Lab., Natl. Mus. Nat. Hist., Wash., D.C. 20560.

FIGURES**A: Richardson, S.L. 1981.**

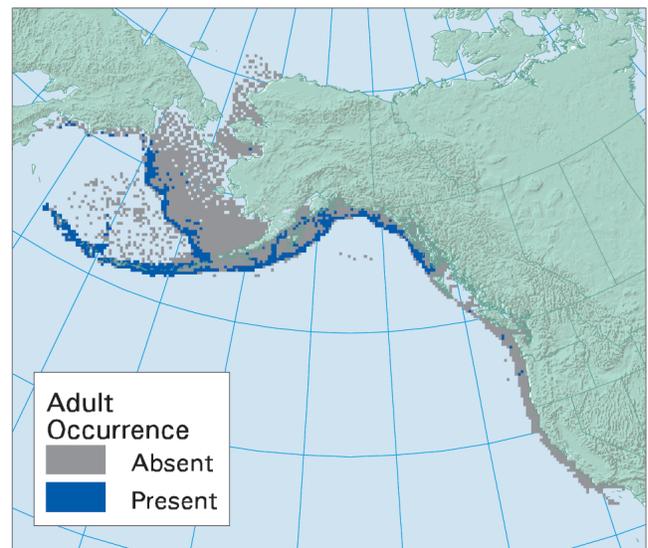
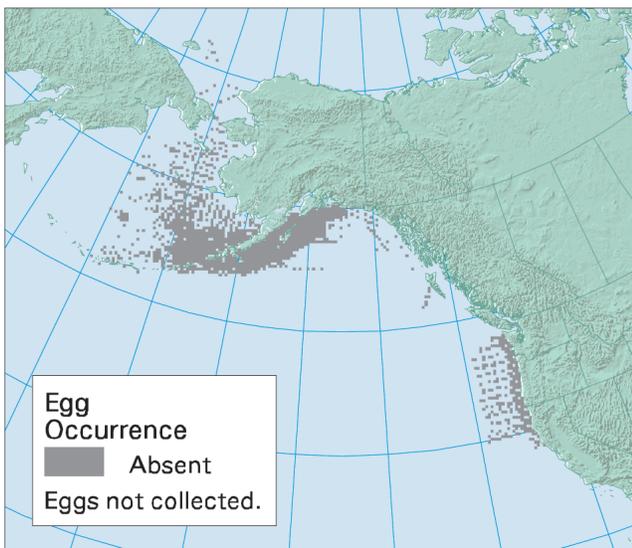
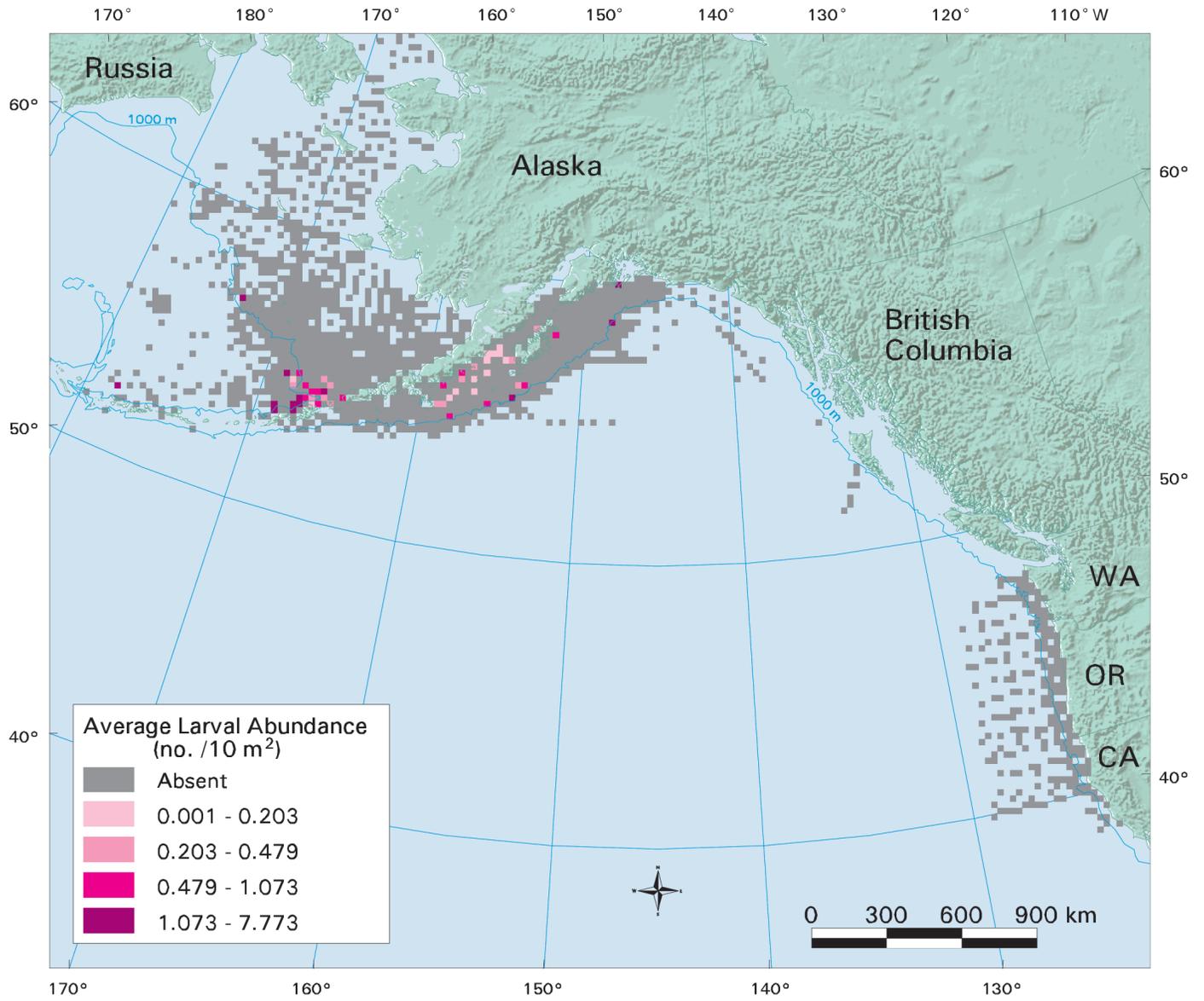
Current knowledge of larvae of sculpins (Pisces: Cottidae and allies) in Northeast Pacific genera with notes on intergeneric relationships. Fish. Bull. 79:103-121.

B: Washington, B.B., H.G. Moser, W.A. Laroche, and W.J. Richards. 1984.

Scorpaeniformes: Development. *In* H.G. Moser, W.J. Richards, D.M. Cohen, M.P. Fahay, A.W. Kendall, Jr., and S.L. Richardson (eds.), Ontogeny and systematics of fishes. Spec. Publ. 1, Am. Soc. Ichthyol. Herpetol., p. 405-428. Allen Press, Lawrence, KS, 760 p.

C: AFSC.

Unpubl. Recruitment Processes, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way NE, Seattle, WA 98115. Illustrated by B. Vinter.



MERISTIC CHARACTERS**BONY PARTS (min-mode-max)****Vertebrae**Total: 30 - 32 - 33¹

Precaudal: 12 - 12 - 12

Caudal: 19¹ - X - 20**Gill Rakers & Branchiostegal Rays**

Upper gill rakers: X - X - X

Lower gill rakers: X - X - X

Branchiostegal rays: 7 - 7 - 7

FIN COUNTS (min-mode-max)

Fin (Position)	Spine(s)	Ray(s)
Pelvic (Thoracic)	1 - 1 - 1	3 - 3 - 3
Dorsal	8 - X - 10 ²	12 - 14 - 15
Pectoral	N/A	19 - 20 - 23
Anal	0 - 0 - 0	9 - 11 - 12

Caudal Fin Counts

Caudal upper secondary: X - X - X

Caudal upper principal: X - X - X

Caudal lower principal: X - X - X

Caudal lower secondary: X - X - X

LIFE HISTORY FEATURES**GENERAL**

Range:	Bering Sea, 54 to 66 °N - Washington, 46 to 48° 50' N
Ecology:	Epi-, meso-, and bathybenthal, 75-1980 m
ELH Pattern:	Parity and eggs unknown, pelagic larvae
Longevity:	

SPAWNING

Area:	
Season:	
Mode:	
Fecundity:	
Age at first maturity:	
Migration:	

EARLY LIFE HISTORY DESCRIPTION**EGGS****Diameter (mm):****No. of oil globules:****Oil globule diameter:****Yolk:****Chorion:****Egg/Embryo pigment:****Pigment diagnostics:****Diagnostic characters:****LARVAE****Hatch size(mm SL):****Preanal length(%SL):****Flexion length (mm SL):****Length at transformation
(mm SL):****Fin ray development
sequence:****Larval Pigment Patterns**

In each developmental larval stage, pigment is present in the regions listed below. For pigment regions see Figure 6.

Yolk-sac: yolk, crown, nape, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, mediolateral

Preflexion: mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral

Flexion: mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral

Postflexion: mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral

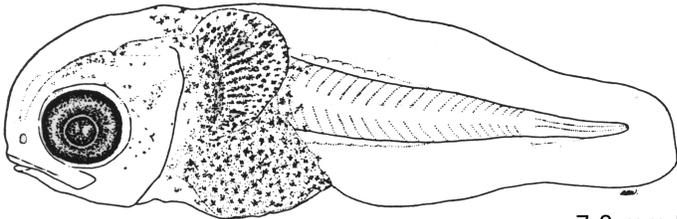
Juvenile: mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, dorsal finfold, anal finfold, pectoral fin, dorsal, ventral, mediolateral

Pigment Diagnostics: Pigment laterally over a quarter of the body, increasing to three-quarters with development

Diagnostic characters

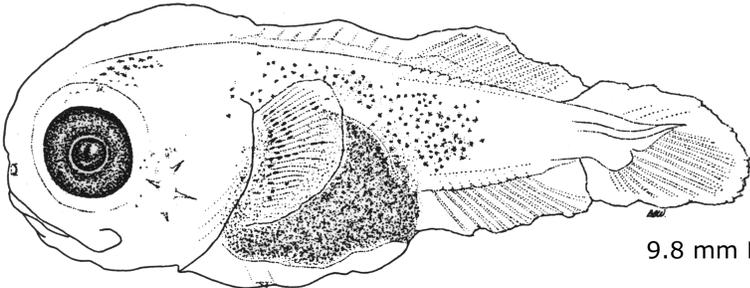
Fifth accessory preopercular spines (sometimes difficult to see), outer layer of loose skin more pronounced than in other genera

A



7.0 mm NL

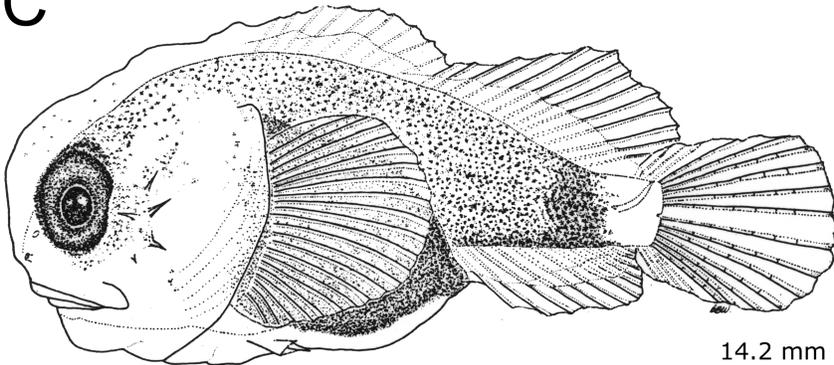
B



9.8 mm NL

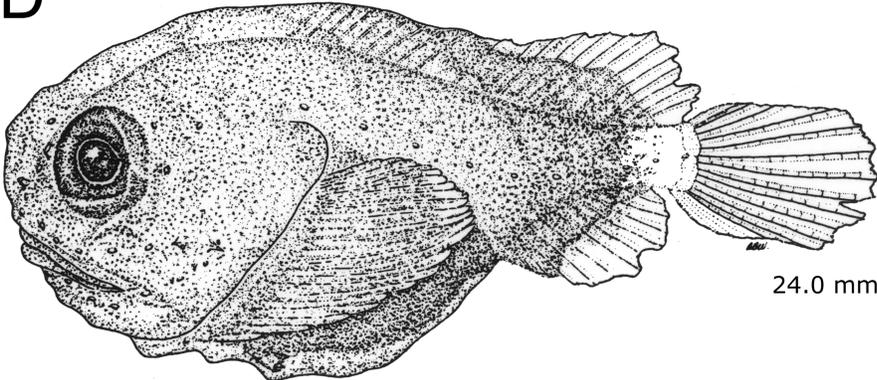
Accessory preopercular spine

C



14.2 mm SL

D



24.0 mm SL

GENERAL REFERENCES

Ref 1: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

Ref 2: Richardson, S.L., and C. Bond. 1978.

Two unusual cottoid fishes from the Northeast Pacific. Paper presented at Ann. Meet., Am. Soc. Ichthyol. Herpetol., Tempe, Arizona, 33 p. [Avail. A.C. Matarese, Alaska Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, 7600 Sand Point Way N.E., Seattle, WA 98115]

FOOTNOTES

¹ **Amaoka, K., K. Nakaya, H. Araya, and T. Yasui (eds). 1983.**

Fishes from the north-eastern Sea of Japan and the Okhotsk Sea off Hokkaido: The intensive research of unexploited fishery resources on continental slopes. Japan Fisheries Resource Conservation Association, 372 p.

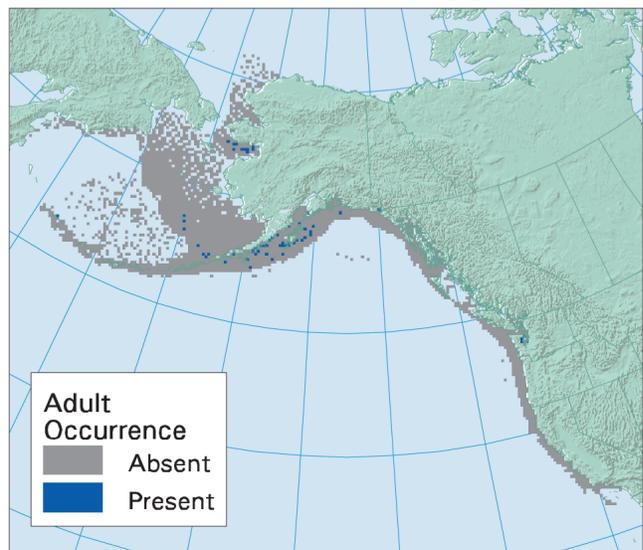
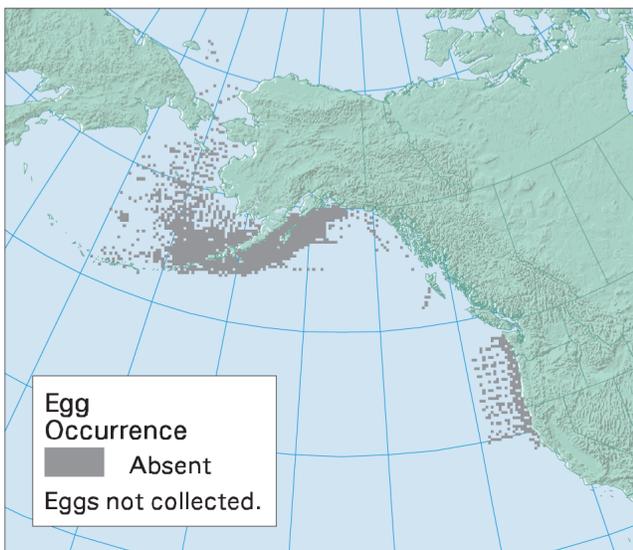
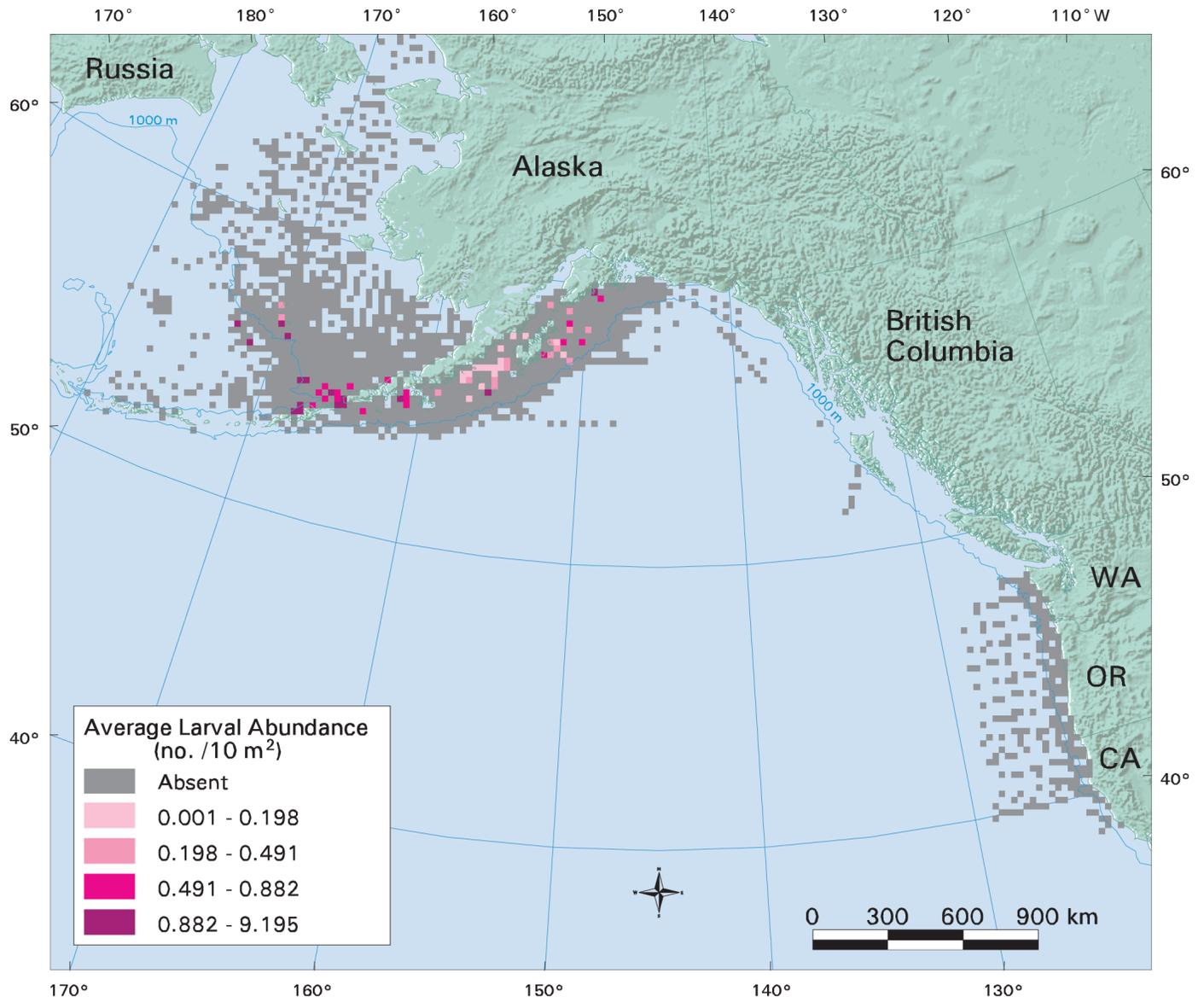
² **Mecklenburg, C.W., T.A. Mecklenburg, and L.K. Thorsteinson. 2002.**

Fishes of Alaska. Am. Fish. Soc., Bethesda, MD, 1037 p.

FIGURES

A - D: Richardson, S.L., and C. Bond. 1978.

Two unusual cottoid fishes from the Northeast Pacific. Paper presented at Ann. Meet., Am. Soc. Ichthyol. Herpetol., Tempe, Arizona, 33 p. [Avail. A.C. Matarese, Alaska Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, 7600 Sand Point Way N.E., Seattle, WA 98115]



MERISTIC CHARACTERS**BONY PARTS (min-mode-max)****Vertebrae**

Total: 34 - X - 37
 Precaudal: 11 - 11 - 11
 Caudal: 21 - 21 - 21

Gill Rakers & Branchiostegal Rays

Upper gill rakers: X - X - X
 Lower gill rakers: X - X - X
 Branchiostegal rays: 7 - 7 - 7

FIN COUNTS (min-mode-max)

Fin (Position)	Spine(s)	Ray(s)
Pelvic (Thoracic)	1 - 1 - 1	3 - 3 - 3
Dorsal	9 - 11 - 12	12 - 14 - 17
Pectoral	N/A	19 - 21 - 23
Anal	0 - 0 - 0	10 - 12 - 14

Caudal Fin Counts

Caudal upper secondary: X - X - X
 Caudal upper principal: X - X - X
 Caudal lower principal: X - X - X
 Caudal lower secondary: X - X - X

LIFE HISTORY FEATURES**GENERAL**

Range: Bering Sea, 54 to 66 °N -
 Washington, 46 to 48° 50' N
Ecology: Epi- and mesobenthic, 9-219 m
ELH Pattern: Oviparous, demersal eggs, pelagic
 larvae
Longevity:

SPAWNING

Area:
Season: Winter - spring (British Columbia)
Mode:
Fecundity:
Age at first maturity:
Migration:

EARLY LIFE HISTORY DESCRIPTION**EGGS**

Diameter (mm): 1.4
No. of oil globules:
Oil globule diameter:
Yolk: Homogeneous
Chorion:
Egg/Embryo pigment:
Pigment diagnostics:
Diagnostic characters:

LARVAE

Hatch size(mm SL): 6 - 7
Preanal length(%SL):
Flexion length (mm SL):
Length at transformation (mm SL): ~13 - 14
Fin ray development sequence:

Larval Pigment Patterns

In each developmental larval stage, pigment is present in the regions listed below. For pigment regions see Figure 6.

Yolk-sac: yolk, mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral

Preflexion: mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral, caudal

Flexion: mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral

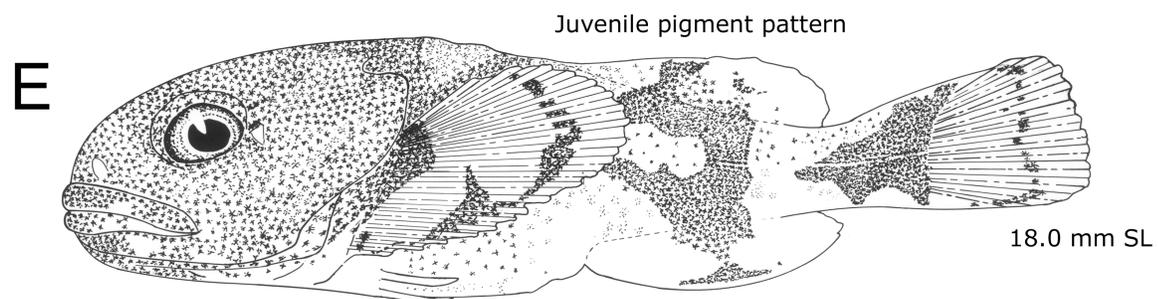
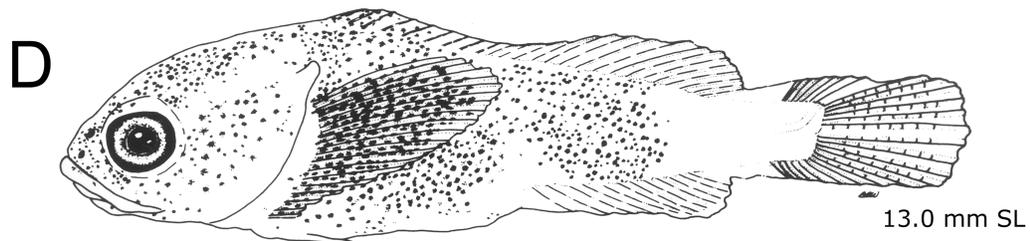
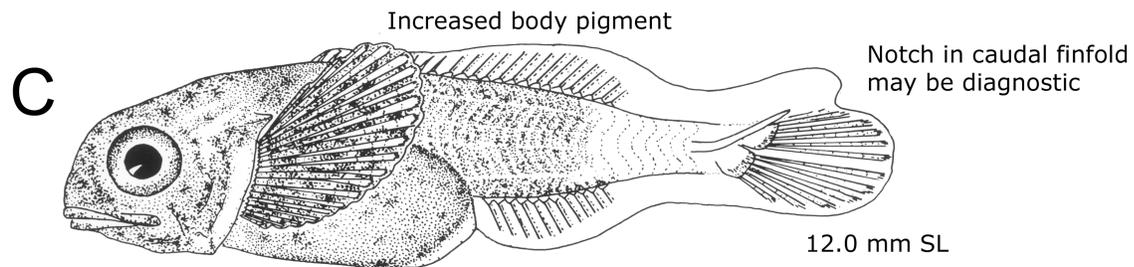
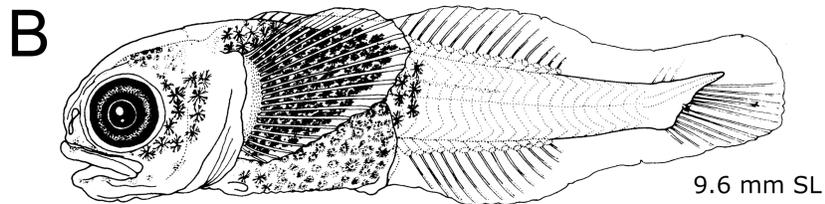
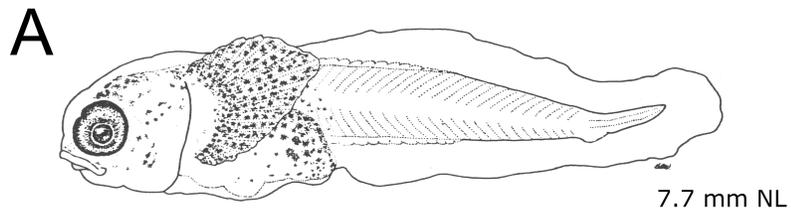
Postflexion: mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral

Juvenile: mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, dorsal finfold, anal finfold, caudal finfold, pectoral fin, dorsal, ventral, mediolateral, caudal

Pigment Diagnostics: Large pigmented pectoral fins. Distinguished from *Psychrolutes sigalutes* by: more lateral pigment on head and body with development

Diagnostic characters

Tadpole shape, large head, outer layer of loose, flabby skin; large pigmented pectoral fins, no head or preopercular spines. Distinguished from *Psychrolutes sigalutes* by: more lateral pigment on head and body with development, pectoral-fin ray count (19-23)



GENERAL REFERENCES**Ref 1: Blackburn, J.E. 1973.**

A survey of the abundance, distribution, and factors affecting distribution of ichthyoplankton in Skagit Bay. M.S. thesis, Univ. Wash., Seattle, WA 98195, 136 p.

Ref 2: Marliave, J.B. 1975.

The behavioral transformation from the planktonic larval stage of some marine fishes reared in the laboratory. Ph.D. diss., Univ. British Columbia, Vancouver, B.C., Canada, 231 p.

Ref 3: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

FIGURES**A: Richardson, S.L., and C. Bond. 1978.**

Two unusual cottoid fishes from the Northeast Pacific. Paper presented at Ann. Meet., Am. Soc. Ichthyol. Herpetol., Tempe, Arizona, 33 p. [Avail. A.C. Matarese, Alaska Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, 7600 Sand Point Way N.E., Seattle, WA 98115]

B: Kojima, J. 1988.

Psychrolutes paradoxus. In M. Okiyama (ed.), An atlas of early stage fishes of Japan, p. 869-870. Tokai Univ. Press, Tokyo, 1154 p. [In Japanese.]

C: Marliave, J.B. 1975.

The behavioral transformation from the planktonic larval stage of some marine fishes reared in the laboratory. Ph.D. diss., Univ. British Columbia, Vancouver, B.C., Canada, 231 p.

D: Richardson, S.L. 1981.

Current knowledge of larvae of sculpins (Pisces: Cottidae and allies) in Northeast Pacific genera with notes on intergeneric relationships. Fish. Bull. 79:103-121.

E: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

Distribution map is not currently available

MERISTIC CHARACTERS**BONY PARTS (min-mode-max)****Vertebrae**Total: 33 - X - 36¹

Precaudal: 12 - 12 - 12

Caudal: 23 - 23 - 23

Gill Rakers & Branchiostegal Rays

Upper gill rakers: X - X - X

Lower gill rakers: X - X - X

Branchiostegal rays: 7 - 7 - 7

FIN COUNTS (min-mode-max)

Fin (Position)	Spine(s)	Ray(s)
Pelvic (Thoracic)	1 - 1 - 1	3 - 3 - 3
Dorsal	7 - 8 - 9	19 - 20 - 20
Pectoral	N/A	22 - 24 - 26
Anal	0 - 0 - 0	12 - 13 - 14

Caudal Fin Counts

Caudal upper secondary: X - X - X

Caudal upper principal: X - X - X

Caudal lower principal: X - X - X

Caudal lower secondary: X - X - X

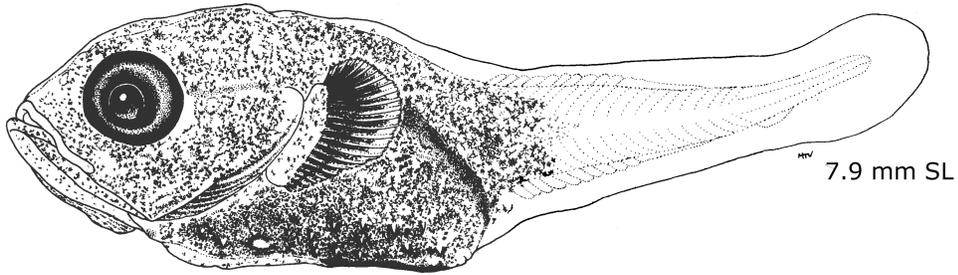
LIFE HISTORY FEATURES**GENERAL****Range:** Bering Sea, 54 to 66 °N - Monterey, 37 °N**Ecology:** Meso- and bathybenthal, 839-2800 m**ELH Pattern:** Oviparous, pelagic larvae**Longevity:****SPAWNING****Area:****Season:****Mode:****Fecundity:****Age at first maturity:****Migration:****EARLY LIFE HISTORY DESCRIPTION****EGGS****Diameter (mm):****No. of oil globules:****Oil globule diameter:****Yolk:****Chorion:****Egg/Embryo pigment:****Pigment diagnostics:****Diagnostic characters:****LARVAE****Hatch size(mm SL):****Preanal length(%SL):** 51 - 58, increasing to 79 with development**Flexion length (mm SL):** ~8**Length at transformation (mm SL):** >13.4, <26.4**Fin ray development sequence:** Pectorals, 2nd dorsal and anal, caudal, 1st dorsal, pelvics**Larval Pigment Patterns**

In each developmental larval stage, pigment is present in the regions listed below. For pigment regions see Figure 6.

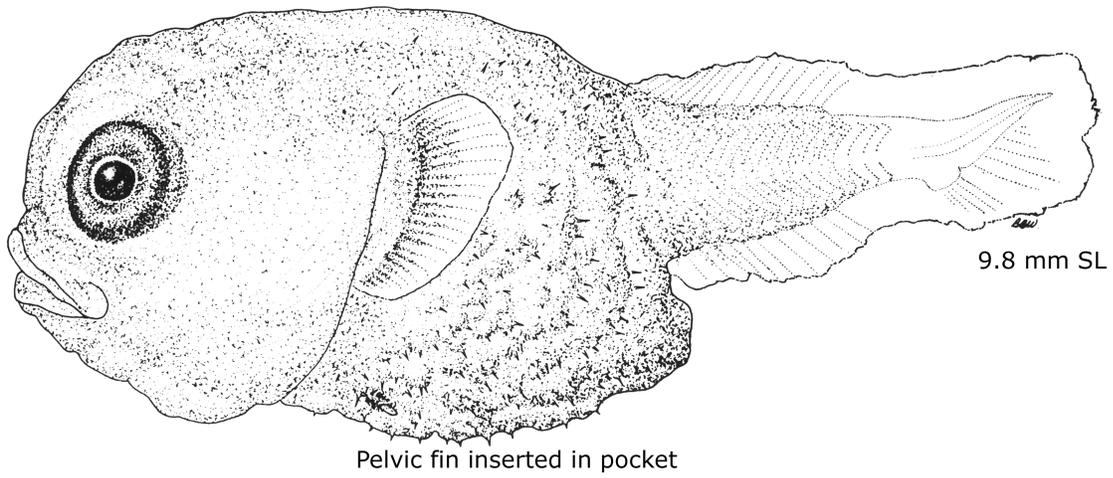
Yolk-sac:**Preflexion:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, anal finfold, pectoral fin, dorsal, ventral, mediolateral**Flexion:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, anal finfold, pectoral fin, dorsal, ventral, mediolateral**Postflexion:** mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, dorsal finfold, anal finfold, pectoral fin, dorsal, ventral, mediolateral, caudal**Juvenile:****Pigment Diagnostics:** Larvae are pigmented over first quarter of the body, increasing laterally to the entire body except at tail tip; dorsal and anal finfolds and distal portion of pectoral fin unpigmented**Diagnostic characters**

Lack of head spines, prickles over body, globase morphology unlike any other cottid, loose outer skin, pelvic fin appears to be inserted in pockets of skin with only the tips exposed

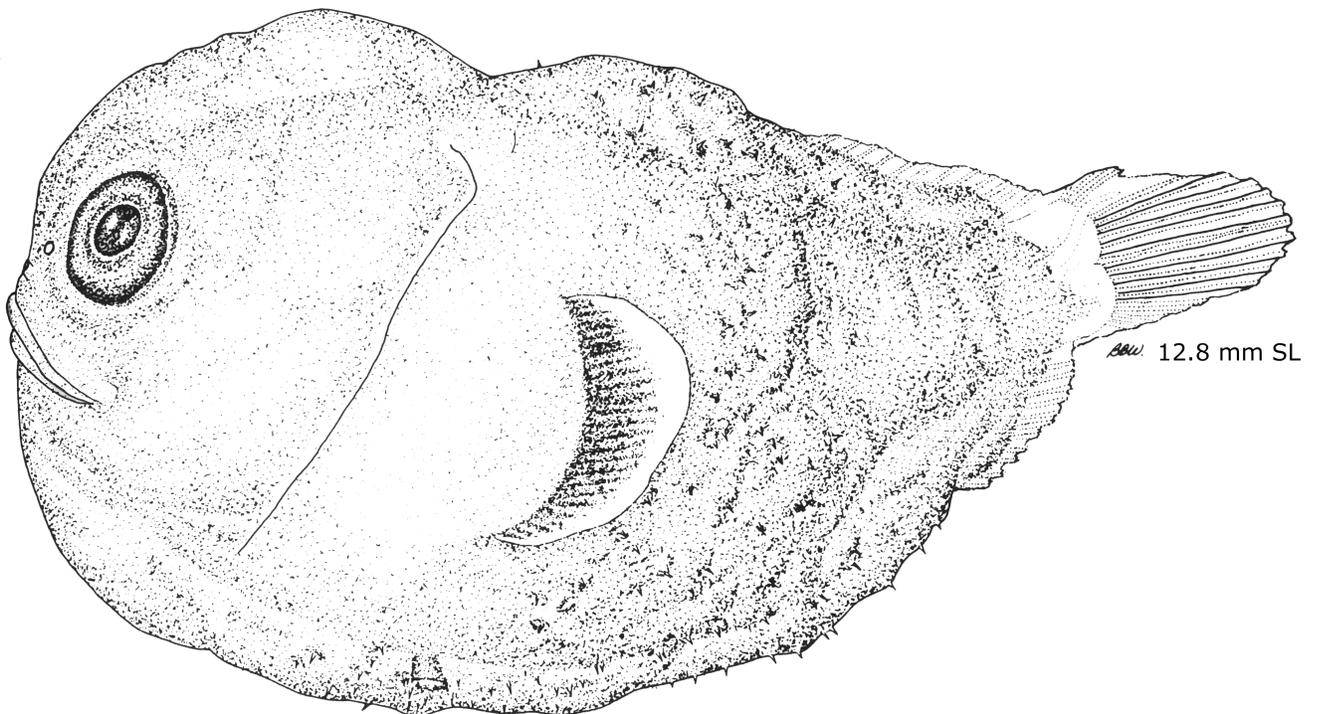
A



B



C



GENERAL REFERENCES**Ref 1: Ambrose, D.A. 1996.**

Psychrolutidae: Fathead sculpins. *In* H.G. Moser (ed.), The early stages of fishes in the California Current region. CalCOFI Atlas 33, p. 841-843. Allen Press, Lawrence, KS, 1505 p.

Ref 2: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

Ref 3: Nelson, J.S. 1980.

Psychrolutes sio, a new psychrolutid fish (Scorpaeniformes) from the southeastern Pacific. *Can. J. Zool.* 58(3):443-449.

Ref 4: Richardson, S.L., and B.B. Washington. 1980.

Guide to the identification of some sculpin larvae from marine and brackish waters off Oregon and adjacent areas of the Northeast Pacific. NOAA Tech. Rep. NMFS Circ. 430, 56 p.

FOOTNOTES**¹ Amaoka, K., K. Nakaya, H. Araya, and T. Yasui (eds). 1983.**

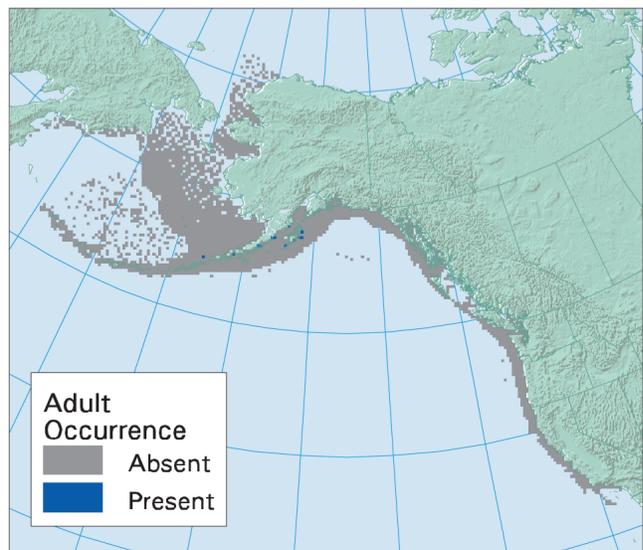
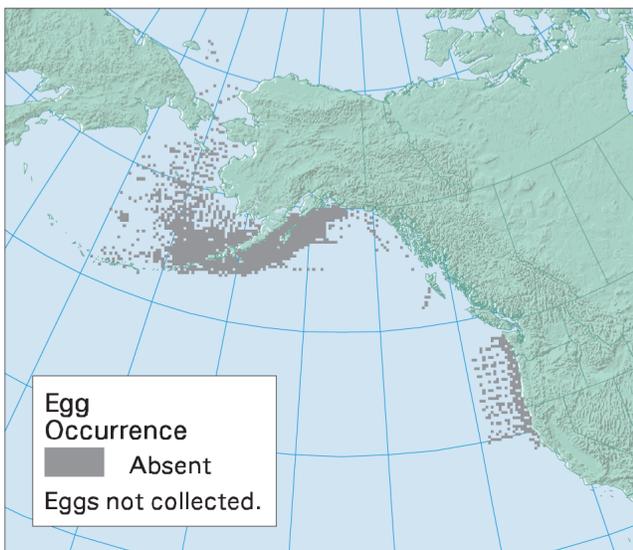
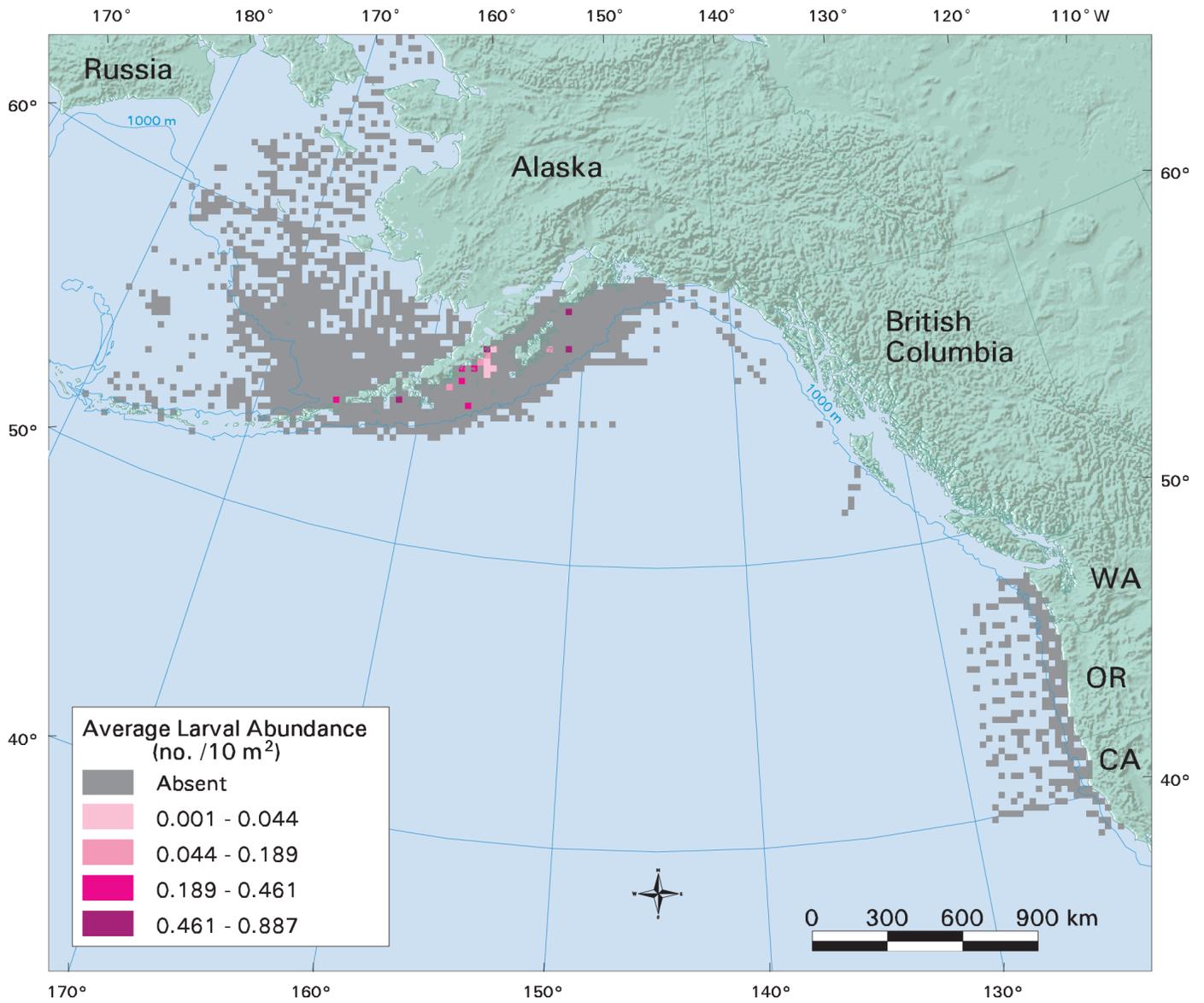
Fishes from the north-eastern Sea of Japan and the Okhotsk Sea off Hokkaido: The intensive research of unexploited fishery resources on continental slopes. Japan Fisheries Resource Conservation Association, 372 p.

FIGURES**A: Ambrose, D.A. 1996.**

Psychrolutidae: Fathead sculpins. *In* H.G. Moser (ed.), The early stages of fishes in the California Current region. CalCOFI Atlas 33, p. 841-843. Allen Press, Lawrence, KS, 1505 p.

B, C: Richardson, S.L., and B.B. Washington. 1980.

Guide to the identification of some sculpin larvae from marine and brackish waters off Oregon and adjacent areas of the Northeast Pacific. NOAA Tech. Rep. NMFS Circ. 430, 56 p.



MERISTIC CHARACTERS**BONY PARTS (min-mode-max)****Vertebrae**

Total: 33 - 34 - 35
 Precaudal: 13 - 13 - 13
 Caudal: 20 - 20 - 20

Gill Rakers & Branchiostegal Rays

Upper gill rakers: X - X - X
 Lower gill rakers: X - X - X
 Branchiostegal rays: 7 - 7 - 7

FIN COUNTS (min-mode-max)

Fin (Position)	Spine(s)	Ray(s)
Pelvic (Thoracic)	1 - 1 - 1	3 - 3 - 3
Dorsal	7 - X - 8	18 - X - 19
Pectoral	N/A	14 - 16 - 17
Anal	0 - 0 - 0	12 - 14 - 15

Caudal Fin Counts

Caudal upper secondary: X - X - X
 Caudal upper principal: X - X - X
 Caudal lower principal: X - X - X
 Caudal lower secondary: X - X - X

LIFE HISTORY FEATURES**GENERAL**

Range: Bering Sea, 54 to 66 °N - Washington, 46 to 48° 50' N
Ecology: Epi- and mesobenthic, 0-225 m
ELH Pattern: Oviparous, demersal eggs, pelagic larvae (although juveniles tend to reenter water column for feeding, producing a protracted period of ambivalence toward settlement)
Longevity:

SPAWNING

Area: Rocky subtidal areas on solid substrate
Season: Aug (British Columbia)
Mode: Polygamous males guard nest
Fecundity: Range/function: mean=130
Age at first maturity:
Migration:

EARLY LIFE HISTORY DESCRIPTION**EGGS**

Diameter (mm): 2.3
No. of oil globules:
Oil globule diameter:
Yolk: Homogeneous; pink
Chorion: White
Egg/Embryo pigment:
Pigment diagnostics:
Diagnostic characters:

LARVAE

Hatch size(mm SL): 6 - 7
Preanal length(%SL):
Flexion length (mm SL):
Length at transformation (mm SL): 18 - 20 (settle) ¹
Fin ray development sequence:

Larval Pigment Patterns

In each developmental larval stage, pigment is present in the regions listed below. For pigment regions see Figure 6.

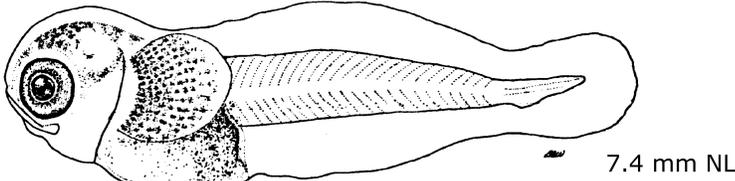
Yolk-sac: yolk, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, mediolateral
Preflexion: mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, mediolateral
Flexion: mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, mediolateral
Postflexion: mouth, crown, nape, cheek, isthmus, dorsal gut, lateral gut, ventral gut, caudal finfold, pectoral fin, dorsal, ventral, mediolateral, caudal
Juvenile: mouth, crown, nape, cheek, dorsal gut, lateral gut, ventral gut, pectoral fin, dorsal, ventral, mediolateral, caudal

Pigment Diagnostics: Large pigmented pectoral fins. Distinguished from *Psychrolutes paradoxus* by: less body pigment

Diagnostic characters

Tadpole shape, large head, outer layer of loose flabby skin, large pigmented pectoral fins, no head or preopercular spines. Distinguished from *Psychrolutes paradoxus* by: pectoral-fin ray count (14-17), less body pigment

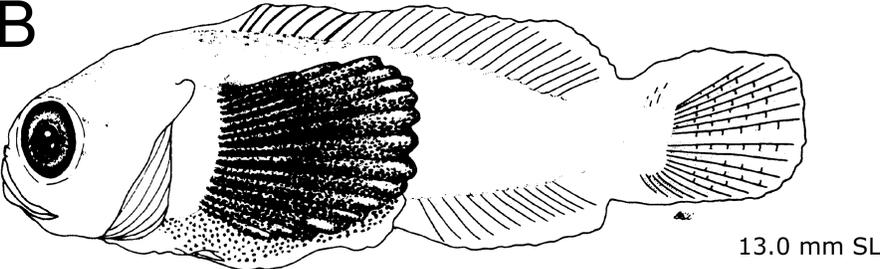
A



Large pigmented pectoral fins

Lack of head spines

B



GENERAL REFERENCES**Ref 1: Marliave, J.B. 1975.**

The behavioral transformation from the planktonic larval stage of some marine fishes reared in the laboratory. Ph.D. diss., Univ. British Columbia, Vancouver, B.C., Canada, 231 p.

Ref 2: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

Ref 3: Washington, B.B., H.G. Moser, W.A. Laroche, and W.J. Richards. 1984.

Scorpaeniformes: Development. *In* H.G. Moser, W.J. Richards, D.M. Cohen, M.P. Fahay, A.W. Kendall, Jr., and S.L. Richardson (eds.), Ontogeny and systematics of fishes. Spec. Publ. 1, Am. Soc. Ichthyol. Herpetol., p. 405-428. Allen Press, Lawrence, KS, 760 p.

FOOTNOTES**¹ Marliave, J.B. 1981.**

Vertical migrations and larval settlement in *Gilbertidia sigalutes* F. Cottidae. Rapp. P.-V. Reun. Cons. Int. Explor. Mer 178:349-351.

FIGURES**A: Richardson, S.L., and C. Bond. 1978.**

Two unusual cottoid fishes from the Northeast Pacific. Paper presented at Ann. Meet., Am. Soc. Ichthyol. Herpetol., Tempe, Arizona, 33 p. [Avail. A.C. Matarese, Alaska Fish. Sci. Cent., Natl. Mar. Fish. Serv., NOAA, 7600 Sand Point Way N.E., Seattle, WA 98115]

B: Richardson, S.L. 1981.

Current knowledge of larvae of sculpins (Pisces: Cottidae and allies) in Northeast Pacific genera with notes on intergeneric relationships. Fish. Bull. 79:103-121.